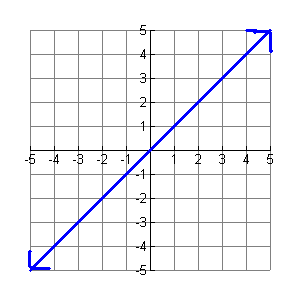
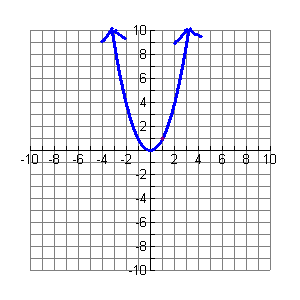
**Algebra I EOC Study Guide**

* **Domain** means x values. **Range** means y values.
* These are the **parent functions:**

**Linear Parent Function Quadratic Parent Function**

* **Linear** means line.
* How to graph a line:
  + Solve for y. (Get y by itself.)
    - Example 2x – 3y = 12

-2x -2x

-3y = -2x + 12

-3 -3 -3

y = x -4

- 4 is the **y-intercept**

 is the **slope**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| x | y   |  |  | | --- | --- | | x | y | | 0 | 1 | | 1 | 3 | | 2 | 9 | | 3 | 27 | | 4 | 81 |   + 3  + 2 |
| 0 | 2  X 3  + 2 |
| 1 | 4  X 3  + 2  + 5  + 2 |
| 2 | 6  X 3  + 2  + 7  + 2 |
| 3 | 8  X 3  + 9  + 2 |
| 4 | 10 |

|  |  |
| --- | --- |
| x | y |
| 0 | 2 |
| 1 | 5 |
| 2 | 10 |
| 3 | 17 |
| 4 | 26 |

**Linear Quadratic Exponential**

* When a line is written in standard form Ax + By = C, then you can use the cover-up method to find the x-intercept and the y-intercept:

3x + 4y = 12

If you want to find the x-intercept, If you want to find the y-intercept,

then cover-up the y. then cover-up the x.

3x + 4y = 12 3x + 4y = 12

3x + 4y = 12 3x + 4y = 12

3x = 12 4y = 12

3 3 4 4

x = 4 y = 3

The x-intercept is at (4, 0). The y-intercept is at (0, 3).

*  or 

How to find slope using the slope formula: **Label x1, y1, x2, y2**

Given two points: Find the slope of the line containing the points

(5, 8) and (7, -2).

**x1 y1 x2 y2**



The slope of the line is -5.

* How to find slope from a table.

|  |  |
| --- | --- |
| x  **x1** | y  **y1** |
| 1  **x2** | 2  **y2** |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |
| 5 | 10 |



The slope is 2.

*  means y
* , find .

x is normally inside the parentheses, so this is saying that x = 2

So, plug-in a 2 for x:

3 \*2 + 1 = 6 + 1 = 7.

This means that .

* How do you tell if a relation is a function?
  + A relation is a function, only if the **x values do NOT repeat**.

Examples:

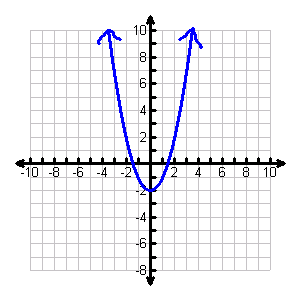
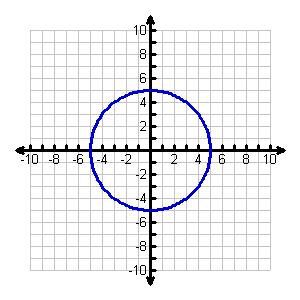
|  |  |
| --- | --- |
| x | y |
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |
| 3 | 10 |

|  |  |
| --- | --- |
| x | y |
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |
| 5 | 10 |

**Function** **NOT** a Function

(the 3 repeats)

A relation is a function if it passes the vertical line test.

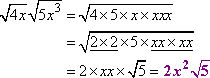


**Function** **NOT** a Function

Any vertical line you draw Any vertical line you draw goes

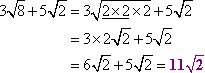
goes through the parabola through the circle more than one

only one time. time.



**Simplifying Radicals:**

sqrt[75] = sqrt[3 * 25] = sqrt[25] sqrt[3] = 5 sqrt[3]

sqrt[20 r^18 s t^21] = sqrt[4 * r^18 * t^20 * 5 * s * t] = 2 * r^9 * t^10 * sqrt[5 * s * t] = 2 r^9 t^10 sqrt[5st]

These formulas will not be on the formula chart. **You need to have these memorized!!!**

**Exponential Growth:** 

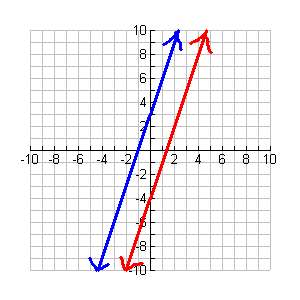
**Exponential Decay:** 

**a** is the initial amount (how much you start with)

**r** is the percentage rate, expressed as a decimal.

**ALWAYS CHANGE PERCENTAGES TO DECIMALS BY MOVING THE DECIMAL TWO PLACES TO THE LEFT!** Ex. 2% = 0.02

* **Parallel lines** have the **same slope**:

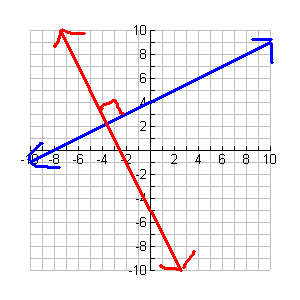


y = 3x - 4

y = 3x + 3

These lines are parallel because they have the same slope. They both have a slope of 3.

* **Perpendicular lines** have **opposite reciprocal slopes**.



**Opposite** means that the two slopes have different signs. One slope must be positive and the other slope must be negative.

**Reciprocal** means that the slopes are inverses. To find the inverse, flip the fraction.

y = x + 4

y = -2x - 5

In the above example the slopes are  and . Notice that the slopes have opposite signs and the factions are reciprocals (the fractions have been flipped).

Notice that perpendicular lines meet at a 90o angle.

* Constants and Coefficients:

Example: 

5 is the **constant**. A **constant** is a number that is not in front of a variable. The number is by itself, usually at the end of the expression.

3 and -2 are **coefficients**. A **coefficient** is a number in front of a variable.